

Claims:

1. A light emitting device including a light emitting element and a light sensor for detecting the luminous intensity of the light emitted from the light emitting element,
  - 5       said light emitting element including a lower electrode, a light emitting material layer including at least a light emitting layer, and an upper electrode having light transparency, which are formed on a substrate in the named order, one of said lower electrode and said upper electrode acting as a cathode, and the other acting as an anode,
  - 10       said light sensor being formed on said light emitting element.
2. A light emitting device claimed in Claim 1, wherein said light sensor is formed on said upper electrode.
- 15 3. A light emitting device claimed in Claim 1, wherein light emitting element is an electro-luminescence element,
  4. A light emitting device claimed in Claim 3, wherein said electro-luminescence element includes an organic thin film as said light emitting-  
20 layer included in said light emitting material layer, said organic thin film has a structure emitting the light in response to an applied current.
  5. A light emitting device claimed in Claim 4, wherein a hole injection and transport layer is provided between said light emitting layer and said  
25 other of said lower electrode and said upper electrode acting as the anode.

6. A light emitting device claimed in Claim 5, wherein an electron injection and transport layer is provided between said light emitting layer and said one of said lower electrode and said upper electrode acting as the cathode.

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7. A light emitting device claimed in Claim 6, wherein said light sensor includes a pn junction formed by a region formed of a p-type semiconductor and another region formed of an n-type semiconductor.

10 8. A light emitting device claimed in Claim 6, wherein said light sensor includes a pin structure formed by a region formed of a p-type semiconductor, another region formed of an n-type semiconductor, and an intrinsic semiconductor sandwiched between those two regions.

15 9. A light emitting system comprising:

a light emitting device including a light emitting element and a light sensor for detecting the luminous intensity of the light emitted from the light emitting element, said light emitting element including a lower electrode, a light emitting material layer including at least a light emitting layer, and an upper electrode having light transparency, which are formed on a substrate in the named order, one of said lower electrode and said upper electrode acting as a cathode, and the other acting as an anode, said light sensor being formed on said light emitting element, said light sensor included in said light emitting device outputting the detection result of the luminous intensity as a current signal,

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a light sensor switching element for switching whether or not a biasing voltage is applied which enables to generate the current signal in

proportion to the amount of the light received, said light sensor switching element being provided in the way of a bias voltage supplying line for said light sensor,

5 a light sensor switching unit for controlling a switching operation of said light sensor switching element, said light sensor switching element being connected to said light sensor switching unit through a light sensor switching line.

10 10. A light emitting system claimed in Claim 9 including a plurality of light emitting devices,

wherein said light sensor switching line is located in the form of a matrix having rows and columns,

15 wherein each light sensor switching element is connected to one light sensor switching line of a column direction and to one light sensor switching line of a row direction

20 wherein said light sensor switching lines of the column direction and the row direction are connected to said light sensor switching unit, which applies a voltage to a selected column direction light sensor switching line and a selected row direction light sensor switching line so that the biasing voltage is applied to the specific light sensor connected to the light sensor switching element connected to said selected column direction light sensor switching line and said selected row direction light sensor switching line, whereby the current signal generated by said specific light sensor is detected.

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11. A light emitting system claimed in Claim 9 further including a luminous intensity detecting unit connected to said light sensor for

detecting, as luminous intensity information of the light emitted from said light emitting element, the current signal generated in response to a reception by said light sensor, of a portion of the light emitted from said light emitting element, or a voltage signal generated from said current  
5 signal.

12. A light emitting system claimed in Claim 9 further including a current applying element connected to said light emitting element, for supplying said light emitting element with an electric current used in  
10 order to cause said light emitting element to emit the light

13. A light emitting system claimed in Claim 12, wherein said current applying element is constituted of a thin film transistor having a gate, a drain and a source, and  
15 wherein the electric current is supplied to said light emitting element by connecting said lower electrode or said upper electrode of said light emitting element to said drain or said source of said thin film transistor.

20 14. A light emitting system claimed in Claim 12, further including a current application switching element for switching whether or not the electric current is supplied from said current applying element to said light emitting element.

25 15. A light emitting system claimed in Claim 14, wherein said current application switching element includes at least one FET transistor, and

wherein said current applying element is constituted of a thin film transistor having a gate, a drain and a source, the drain of said FET transistor included in said current application switching element being connected to the gate of said transistor included in said current applying element,

so that the application of the electric current by said current applying element is switched by an ON-OFF operation of said FET transistor included in said current application switching element.

16. A light emitting system claimed in Claim 12, further including a light emission amount adjusting unit for obtaining an optimum value of the electric current supplied to said light emitting element on the basis of said luminous intensity information of the light emitted from said light emitting element and detected by said luminous intensity detecting unit, said light emission amount adjusting unit adjusting the electric current supplied from said current applying element to said light emitting element, to said optimum value of the electric current.

17. A light emitting system claimed in Claim 14, including a plurality of light emitting devices, and a current application switching unit for controlling the switching operation of said current application switching element which switches whether or not the electric current is supplied from said current applying element to said light emitting element.

wherein said switching line is located in the form of a matrix having rows and columns,

wherein each current application switching element is connected to one light sensor switching line of a column direction and to one light sensor switching line of a row direction

wherein said light sensor switching lines of the column direction  
5 and the row direction are connected to said current application switching unit, which applies a voltage to a selected column direction switching line and a selected row direction switching line so that an electric current is supplied from a specific current applying element connected to a specific current application switching element connected to said selected column  
10 direction switching line and said selected row direction switching line, whereby the current is supplied to said specific light emitting element connected to said specific current applying element.

18. A light emitting system claimed in Claim 17, including a light  
15 emission time adjusting unit for obtaining an optimum time of the electric current supplied to said light emitting element on the basis of said luminous intensity information of the light emitted from said light emitting element and detected by said luminous intensity detecting unit, said light emission time adjusting unit controlling the switching operation  
20 of said current application switching element by said current application switching unit, whereby adjusting the time of the electric current supplied from said current applying element to said light emitting element, to said optimum time of the electric current.

25 19. A light emitting system claimed in Claim 9, wherein said light sensor includes a pn junction formed by a region formed of a p-type semiconductor and another region formed of an n-type semiconductor, or

a pin structure formed by a region formed of a p-type semiconductor, another region formed of an n-type semiconductor, and an intrinsic semiconductor sandwiched between those two regions.

wherein said light sensor switching element includes at least one  
5 FET transistor, a drain of the one FET transistor included in said light sensor switching element being connected to said n-type semiconductor of said light sensor,

said light sensor switching element is switched by an ON-OFF  
operation of said FET transistor having the drain connected to said n-type  
10 semiconductor of said light sensor.

20. A light emitting system claimed in Claim 19, wherein said FET transistor having the drain connected to said n-type semiconductor of said light sensor has a source connected to said luminous intensity detecting  
15 unit through a light sensor current detecting line, so that the current signal generated in response to a reception by said light sensor, of a portion of the light emitted from said light emitting element, flows as a source-drain current of said FET transistor having the drain connected to  
said n-type semiconductor of said light sensor, and is transmitted to said  
20 luminous intensity detecting unit through said light sensor current detecting line.